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| 09/890,784 | 08/06/2001 | Mari Niinikoski | 1499/00049 | 8277 |

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EXAMINER

WYROZEBSKI LEE, KATARZYNA I

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| ART UNIT | PAPER NUMBER |
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1714

DATE MAILED: 03/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/890,784

Applicant(s)

NIINIKOSKI ET AL.

Examiner

Katarzyna Wyrozebski Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 06 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 2, 6-11 in line 1 contain limitation "characterized in that...", which renders claims indefinite. In newly amended claims 3-5 the applicants have changes that limitation to "according to..." which is proper form.

3. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd.

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App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claim 1a recites the broad recitation of "from 5-50 % of starch", and the claim also recites "from 5-40% of starch" which is the narrower statement of the range/limitation.

Claim 1b recites the broad recitation of "from 50-95 % of monomer mixture", and the claim also recites "from 60-95 % of monomer mixture" which is the narrower statement of the range/limitation.

Claim 1b recites the broad recitation of "-50 to 200°C film forming temperature", and the claim also recites "0 to 100°C film forming temperature" which is the narrower statement of the range/limitation further "0 to 70°C film forming temperature" which is even narrower statement of the range/limitation and finally "10 to 50°C film forming temperature" which is most narrower statement of the range/limitation.

Claim 6 recites the broad recitation of "from 15-40 % of starch", and the claim also recites "from 15-35 % of starch" which is the narrower statement of the range/limitation.

Claim 8 recites the broad recitation of "-50 to 200°C film forming temperature", and the claim also recites "0 to 100°C film forming temperature" which is the narrower statement of the range/limitation further "0 to 70°C film forming temperature" which is even narrower statement

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of the range/limitation and finally "10 to 50°C film forming temperature" which is most narrower statement of the range/limitation.

Use Claims

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 12-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12-15 provide for the use of polymer dispersion, but, since the claims do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Additionally, 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Thus, claims 12-15 are also rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See

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for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

In order to overcome this rejection, it is advised that the applicant change the "use for" language in claims 1-8 to "process of using".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under article 21(2) of such treaty in the English language.

5. Claims 1, 8-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Degen (US 4,835,212).

The prior art of Degen discloses coating composition for manufacturing paper products as sizing additive. The composition comprises starch and monomers.

Table in col. 6 discloses 3 types of starches, which can be utilized by the prior art of Degen. Starch III is a cationic potato starch, having intrinsic viscosity of 1.16 and degree of substitution of 0.07. According to claim 1 of Degen, starch is utilized in an amount of 2.7-15 %.

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Although the starch in claim 1 has intrinsic viscosity limit less than 1, the Table in col. 6 still applies against present claims because the prior art of Degen discloses starch III as usable starch.

The monomers of the prior art of Degen include 20-65 % by weight of acrylonitrile, 80-35 % by weight of acrylate esters and 0-10 wt % of other ethylenically unsaturated monomers.

Claim 6 further teaches that the other monomer can be styrene.

The process of the prior art of Degen is as follows: Starch is first mixed with water and added thereto is 10% aqueous calcium acetate at a temperature of 85°C. At a temperature of 85°C, monomers are added and polymerized in presence of hydrogen peroxide (col. 7, examples). The other additives, such as alpha-Amylase A and alpha-Amylase B are most active at pH of 6.5 and 5.0 respectively. Therefore the pH of the solution is either about 6.5 or 5.0 (col. 7, lines 3-5). Amylase is an enzyme, which assists in treatment of starch.

The composition of Degen is usable as pulp-sizing agent also (col. 9, line 57-60). Composition of Degen is applied to a substrate by spraying or dipping (col. 5, line 61) to form a coating on paper. If paper is treated at room temperature, therefore, the polymer of the prior art of Degen is inherently capable of forming film at room temperature, which is approximately 25°C. As a result strength of the paper is increased (col. 5, lines 54-56).

In the light of the above disclosure, the prior art of Degen anticipates requirements of claims rejected above.

6. Claims 1, 8-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Degen (US 4,855,343).

The prior art of Degen discloses coating composition for manufacturing paper products as sizing additive. The composition comprises starch and monomers.

Table in col. 6 discloses 3 types of starches, which can be utilized by the prior art of Degen. Starch V is a cationic potato starch, having intrinsic viscosity of 1.6 and degree of substitution of 0.09. According to claim 1 of Degen, starch is utilized in an amount of 1.5-25 %. Although the starch in claim 1 has intrinsic viscosity limit less than 1, the Table in col. 6 still applies against present claims because the prior art of Degen discloses starch V as usable starch.

The monomers of the prior art of Degen according to claim 1 include 20-65 % by weight of acrylonitrile, 80-35 % by weight of acrylate esters and 0-10 wt % of other ethylenically unsaturated monomers. Claim 6 further teaches that the other monomer can be styrene.

The process of the prior art of Degen is as follows (Example 2, col. 7): Starch is first mixed with water and added thereto is 10% aqueous calcium acetate at a temperature of 85°C. At a temperature of 85°C, monomers are added and polymerized in presence of hydrogen peroxide (col. 7, examples). In particular example 2, col. 7 the monomers are acrylonitrile, acrylate esters and styrene. The other additives, such as alpha-Amylase A and alpha-Amylase B are most active at pH of 6.5 and 5.0 respectively. Therefore the pH of the solution is either about 6.5 or 5.0 (col. 6, lines 42-54). Amylase is an enzyme, which assists in treatment of starch.

The composition of Degen is usable as pulp-sizing agent also (col. 9, line 57-60). Composition of Degen is applied to a substrate by spraying or dipping (col. 5, line 43) to form a coating on paper. If paper is treated at room temperature, therefore, the polymer of the prior art of Degen is inherently capable of forming film at room temperature, which is approximately 25°C. As a result strength of the paper is increased (col. 5, lines 38-40).

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In the light of the above disclosure, the prior art of Degen anticipates requirements of claims rejected above.

7. Claims 1-6, 8, 10-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Konig (WO 99/42490).

Prior art of Konig discloses composition for paper sizing comprising cationic starch and mixture of monomers

Claim 1 of the prior art of Konig discloses composition utilized in paper sizing, which comprises:

10-40 % of starch having degree of substitution of 0.01-0.2 (claim 5)

30-60 % of styrene, which can optionally be substituted

60-30 % of acrylate esters and

0-10 % of other ethylenically unsaturated copolymerizable monomers

Preferred acrylate monomers of the prior art of Konig are n-butyl acrylate and iso-butyl acrylate (claims 2 and 3).

Other monomer that can be utilized in the composition of Konig can be acrylonitrile (page 3, line 29)

Polymerization of the monomers occurs at pH in a range of 5-7 (page 9, line 13) and follows the process according to the examples (see Example 1, page 13): Starch is dissolved in water and mixed at a temperature of 86°C. Hydrogen peroxide is added and then at the same temperature of 86°C monomers are added.

Paper is treated at room temperature and then dried at 100°C, which treatment inherently signifies film forming ability at room temperature (page 21, lines 21-24).

Although the prior art of König does not disclose the intrinsic viscosity of the cationic starch, such is inherent property because it depends on the degree of substitution, amount of monomers and types of monomers. Since all these components overlap, intrinsic viscosity is meant to overlap as well.

In view of the above disclosure, and in view of the fact that the amount of acrylonitrile required can be zero, the prior art of König anticipates requirements of claims rejected above.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims are rejected under 35 U.S.C. 103(a) as being unpatentable over Degen (US 4,835,212) or Degen (US 4,855,343) either one of which in view of Konig (WO 99/42490)

The discussion of the disclosure of Degen (US 4,835,212) or Degen (US 4,855,343) from paragraphs 5 and 6 of this office action is incorporated here by reference.

The difference between the present invention and the disclosures of the prior art of Degen (US 4,835,212) or Degen (US 4,855,343) is percentages of the monomers utilized in the starch composition as well as the amount of starch.

With respect to the above difference, claim 1 of the prior art of Konig discloses composition utilized in paper sizing, which comprises:

10-40 % of starch having degree of substitution of 0.01-0.2 (claim 5)

30-60 % of styrene, which can optionally be substituted

60-30 % of acrylate esters and

0-10 % of other ethylenically unsaturated copolymerizable monomers

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Preferred acrylate monomers of the prior art of Konig are n-butyl acrylate and iso-butyl acrylate (claims 2 and 3).

Other monomer that can be utilized in the composition of Konig can be acrylonitrile (page 3, line 29)

Polymerization of the monomers occurs at pH in a range of 5-7 (page 9, line 13) and follows the process according to the examples (see Example 1, page 13): Starch is dissolved in water and mixed at a temperature of 86°C. Hydrogen peroxide is added and then at the same temperature of 86°C monomers are added.

Starch compositions disclosed by the prior art of record are both usable in paper industry as paper sizing agents. This means that they both are utilized to perform the same function.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention, utilize the amounts of the monomers of the prior art of Konig in either one of the disclosures of Degen and thereby obtain the claimed invention. The combination of two compositions, each of which is taught by the prior art to be useful for the same purpose, in order to for a third composition that is to be used for the very same purpose may be prima facie obvious. *In re Susi*, 440 F.2d 442, 445, 169 USPQ 423, 426 (CCPA 1971).

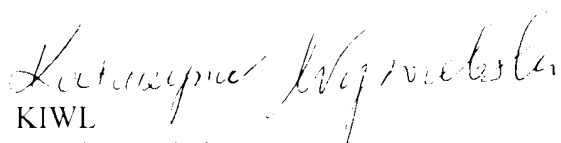
12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The translation of the WO patent applied against present claims and very applicable to the instant invention can be found in US 6,426,381 to Konig. The US document however; does not qualify as a prior art against the present claims.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


KIWL
March 13, 2003